

Summary of Proposals Recommended for Funding Under the SSLRI

Recommendations are subject to final approval by the Grants Officer who ensures compliance with all Federal laws, policies, and procedures (e.g., name checks, permit requirements, NEPA, etc.) Projects should not be initiated in expectation of Federal funding until notice of award document is received.

Proposal #:01-SSL-041

Name of Proposal: Nutritional Significance of Ephemeral High-quality Foraging Opportunities for Steller Sea Lions.

Applicant: University of Washington

Principal Investigator: Glenn B. VanBlaricom

Number of years:3

Proposed Funding Amount:\$573,712

Brief Project Description: An evaluation of the hypothesis that ephemeral high-quality foraging opportunities on certain forage fish species may be more readily available to the eastern population of Steller sea lions than to the declining and endangered western population. They will examine the hypothesis by characterizing within and between region variation in the characteristic dietary fatty acid profiles of forage fish species; conduct studies of captive sea lions to determine the strength and persistence of fatty acid signatures, in sea lion blubber, that result from the feeding on forage fish; and conduct blubber sampling of free ranging sea lions to assess the frequency of occurrence of fatty acid signatures from forage fish in wild sea lion populations. Sampling of blubber from free ranging sea lions will be done in collaboration with scientists from the National Marine Mammal Laboratory, NMFS.

Proposal #: 01-SSL-018

Name of Proposal: High Resolution Foraging Behavior and Movement Patterns of Steller Sea Lion Juveniles in Regions of Increase and Decline

Applicant: University of Alaska Anchorage

Principal Investigator: Jennifer M. Burns PhD.

Number of years: 3

Proposed Funding Amount:\$478,981

Brief Project Description: This project will determine the foraging range and behavior of 20 juvenile Steller sea lions in the Kodiak region (decline) and 20 in the Dutch Harbor/Unimak region (increase) using purpose designed high-resolution satellite relay data loggers (Sea Mammal Research Unit, St. Andrews, Scotland). From this, we will be able to construct fine-scale 3D habitat use maps, map juvenile movement patterns with respect to habitat characteristics (both physical and biological), assess movements relative to critical habitat, and examine differences in foraging effort and diving patterns (diel, seasonal, and regional patterns depth, duration, bout lengths), and characterize the relationship between foraging effort and physiological status. Cooperative activities with ADF&G and NMFS include coordinating tagging effort and design, sharing data on juvenile condition, placing project personnel on cruises within the study areas, and identifying a subset of juveniles captured by NMFS and ADF&G to be outfitted with our SRDLs.

Proposal #: 01-SSL-001**Name of Proposal:** Implications of Varying Food Distribution For Fitness in Steller Sea Lions**Applicant:** University of St. Andrews, UK**Principal Investigator:** Ian Boyd, PhD**Number of years:** 2**Proposed Funding Amount:** \$658,443

Brief Project Description: This proposal addresses the issue of what prey distributions are required to sustain Steller sea lions. It is based upon the application principles concerning the way in which body size interacts with energy expenditure and about how these animals are likely to maximize fitness by optimizing their time-energy budgets under differing environmental conditions. To describe and understand the functional response of Steller sea lions to variation in prey distribution and abundance. This will be done by linking models of sea lion behavior at different scales to examine how changes in prey encounter rates during individual dives is likely to scale up to influence fitness and, in turn, how this influences population dynamics. The study will integrate across most data sources for Steller sea lions and it will develop a new state-based approach to examining population dynamics. Thereby, it will create a tool for the synthesis of past, current and future empirical studies populations and also of the potential consequences of management actions for the recovery of these populations. It will also provide a framework within which to understand how changes in prey distribution and abundance, caused by climate change or by fisheries, are likely to effect sea lion populations. Cooperative activities with NMFS will be required only in as much as access is requested to selected aerial photographs of Steller sea lion haul-outs and data will be required form historical hydroacoustic surveys to develop statistical descriptions of the prey field.

Proposal #: 01-SSL-010**Name of Proposal:** Investigations of Steller Sea Lion Predation by Killer Whales in Southeastern Alaska**Applicant:** University of Alaska Southeast**Principal Investigator:** Janice M. Straley**Number of years:** 3**Proposed Funding Amount:** \$210,774

Brief Project Description: Studies of killer whale predation on declining Steller sea lion populations have suggested that killer whales may have contributed to the decline and that predation is preventing recovery. However, a lack of information on killer whales exists for many areas of Alaska. Killer whale population numbers and the proportion of that population that eat marine mammals are needed to fully assess this situation,. We propose to study killer whale predation rates in southeastern Alaska, where Steller sea lion numbers are increasing. The population dynamics of Steller sea lions that live in southeastern Alaska may be similar to what existed historically in western Alaska, where Steller sea lion numbers have declined dramatically since the 1970s. The project goals will be to 1) provide observational data on killer whale predation upon increasing Steller sea lion population and 2) collect acoustic recordings to determine the structure and composition of killer whale calls at the time of kills. The primary objective will be to compare data collected during this study with data from concurrent studies in the Gulf of Alaska and Aleutian Islands conducted by the North Pacific Universities Marine

Mammal Research Consortium (NPUMMRC). NPUMMRC will use these data in mathematical models of killer whale predation by region in Alaska to better understand the role of predation in the decline and recovery of Steller sea lions.

Proposal #: 01-SSL-007

Applicant: North Pacific Marine Science Foundation

Subproject #1: Bioenergetics Studies of Captive Steller Sea Lions **Principal Investigator:** Dr.

Andrew Trites, Dr. David Rosen **Number of years:** 3 **Brief Project Description:** A series of bioenergetic and nutritional experiments will be conducted with captive Steller sea lions to determine how changes in the biotic and physical environment effect the energy needs, health and survival of sea lions. Feeding manipulations will document the biological value of different key prey species. Also to be consider will be the consequences for Steller sea lions of changes in the type, abundance, or distribution of prey. Determinations of key bioenergetic parameters, in association with a computer model, will clarify the relationship between (individual and population level) sea lion energy budgets, food availability, energetic demands, and survival. Open-water experiments with captive animals will be initiated for the first time to provide bioenergetic data across a wider range of conditions than can be obtained from inside an Aquarium. Our research program will also permit the testing and development of tools and techniques to evaluate sea lions in the wild.

Subproject #3: Steller Sea Lion Diet Quantification Studies **Principal Investigator:** Domonic Tollit PhD, Dr. Andrew Trites **Number of years:** 3 **Brief Project Description:** Controlled feeding studies of captive Steller sea lions and statistical modeling will be used to derive an integrated set of keys, correction factors, relationship, and validations to estimate the composition and size of prey consumed by Steller sea lions (with error terms). Captive feeding studies will focus on the remains of prey found in scat. A concurrent study will validate the use of blubber fatty acid signatures to determine diet composition. A biostatistician will derive appropriate statistical techniques for estimating the size and composition of prey consumed from bones found in scats, as well as address questions concerning the numbers of samples required to accurately quantify diet. Together, these studies aim to improve the accuracy of methods used to determine Steller sea lion diets.

Subproject #8, Title: Killer Whale Predation on Steller Sea Lions in Western Alaska **Principal Investigator:** Lance G. Barrett-Lennard, PhD. **Number of years:** 3 **Brief Project Description:** Predator studies will investigate the role that killer whales and sharks have played in the decline and lack of recovery of Steller sea lions.

Subproject # 9: Remote Passive Acoustic Monitoring of Killer Whales **Principal Investigator:** John Ford, PhD **Number of years:** 3 **Brief Project Description:** This proposal is to develop an innovative new system for passive acoustic monitoring of the movements of killer whale pods in coastal waters of Alaska. This system will take advantage of the unique vocal dialects used by killer whales, which allow acoustic identification of population and, in many cases, social group affiliation of vocalizing individuals. An instrumentation package will be developed which continually monitors the underwater acoustic environment and, upon detection of killer whale signals by an advanced voice recognition algorithm, automatically samples and digitally stores the vocalizations. A network of such acoustic monitoring devices deployed at strategic locations would provide important data on the year-round frequency of occurrence of specific killer whales groups and ecotypes, and an indication of the extent of predatory activities involving marine mammals at key locations. **Proposed Funding Amount:** \$2,807,000

Proposal #: 01-SSL-069

Name of Proposal: A Study to Evaluate Transmitter Implant Methodology

Applicant: Colorado State University

Principal Investigator: Albert Wendell Nelson, DVM

Number of years: 2

Proposed Funding Amount: \$331,444

Brief Project Description: Study in sheep will develop a protocol to be used in sea lions for long term tracking of activities. After this study is complete the technology will be tested in non-endangered seals and sea lions before sea lion study is initiated.

Proposal #: 01-SSL-046

Name of Proposal: Installation of a Remote Census and Photogrammetry Network: Validation and Assessment of Seasonal and Individual Steller Sea Lion Body Condition and Population Trends

Applicant: Texas A&M Research Foundation

Principal Investigator: Dr. Markus Horning

Number of years: 3

Proposed Funding Amount: \$1,056,139

Brief Project Description: Develop and validate the photogrammetric, remote estimation of body mass and condition of steller sea lions, using animals held at the Alaska Sea Life Center. Build and install two remote, Satellite Linked Data Acquisition and Photogrammetry systems (SLIDAP systems), currently under development, at locations in the Aleutian Islands. The two new SLIDAP systems will be used in conjunction with two more systems to collect detailed, year-round census data. We will estimate by three-dimensional photogrammetry, body mass and condition trends at monitoring locations, both cross-sectional and longitudinal, and throughout the year. Assistance is requested from the NMFS for the installation of two SLIDAP systems in the Aleutian Islands, as well as for periodic servicing, via helicopter flights.

Proposal #: 01-SSL-062

Name of Proposal: Early and Late Pregnancy Rates of Alaskan Steller Sea Lions and Examination of the Role of Maternal Condition

Applicant: The Regents of the University of California

Principal Investigator: Bill L. Lasley

Number of years: 3

Proposed Funding Amount: \$774,564

Brief Project Description: This project will examine pregnancy status of Steller sea lion in an increasing (Kodiak Island) and decreasing (Unimak Pass) subpopulation during early and late gestation using reproductive hormone concentrations excreted in fecal material. Will also examine effects of maternal condition on reproductive status using a surrogate otterid species (northern fur seals). Female fur seals will be captured, collect blood samples and from these specimens, generate a non-invasive method of determining lactational status of Steller sea lions (from fecal material). All field sampling will be conducted cooperatively between UC Davis and NMML to reduce research cost and greatly expand information obtained from these data. There is a paucity of information available during our sampling periods and they are life-history stages critical for reproductive female and juvenile Steller sea lions.

Proposal #: 01-SSL-073

Name of Proposal: Improving Access to ADF&G's Lower Cook Inlet Pacific Herring Stock Assessment and Commercial Fishery Database, Including Observations of Steller Sea Lions

Applicant: State of Alaska

Principal Investigator: Edward Otis

Number of years: 1

Proposed Funding Amount: \$66,499

Brief Project Description: Aerial surveys to assess the distribution, abundance, and spawning timing of herring stocks in Lower Cook Inlet (LCI) since 1978. Aerial surveyors also frequently noted the number and location of Steller sea lions and other marine mammals as indications that herring were in the area. Much of this geo-referenced information is available only as notations drawn onto paper maps surveyors used to document their observations during surveys. This project will synthesize ADF&G's LCI herring stock assessment and commercial herring fishery information into an ArcView GIS database that will be made available to other researchers via CD-ROM copies and map layouts. The resulting database is expected to have utility to other researchers attempting to better understand the relationship between Steller sea lions, commercial fisheries, and one of their shared prey species.

Proposal #: 01-SSL-050

Name of Proposal: Foraging Ecology and Hunting Behavior of Adult and Juvenile Steller Sea Lions

Applicant: Texas A&M Research Foundation

Principal Investigator: Randall Davis

Number of years: 3

Proposed Funding Amount: \$711,112

Brief Project Description: Much of our knowledge about Steller sea lion diving and foraging behavior is based on dive depth and duration data, but information on actual foraging behavior and effort is circumstantial. We propose to study the hunting behavior and three-dimensional movements of SSL by attaching a small video system/data recorder to adults and juveniles. This system will record 80 hr of video and audio as well as depth, swim speed, compass bearing, ambient water temperature, dissolved oxygen, and ambient light level at one-second intervals. In addition, it will record swimming effort by monitoring fore flipper movement with a digital accelerometer. These data will provide fundamental information on foraging ecology of SSL and the foraging behaviors they use to locate and capture prey. We will examine the question of whether juvenile SSL are excluded from food resources available to deeper diving adults.

Proposal #: 01-SSL-025

Name of Proposal: Fish Assemblages Associated with Steller Sea Lion haul-outs

Applicant: UAF, School of Fisheries & Ocean Sciences

Principal Investigator: Brenda Konar

Number of years: 2

Proposed Funding Amount: \$175,559

Brief Project Description: The proposal is to use SCUBA-based surveys to quantify juvenile and adult fish species present in nearshore waters adjacent to two sea lion haul-outs. Seasonal prey availability and biological and physical parameters recorded at these sites will be used to describe nearshore habitat used by young sea lions for shelter, prey, and training. This will be compared to

results of similar surveys we will conduct at two nearby sites not used by Steller sea lions as haul-outs as a means of assessing key components of traditionally used haul-out habitat. Our SCUBA surveys will be coordinated and scheduled to coincide with and augment ongoing research on Steller sea lions diets, foraging patterns, and offshore prey availability.

Proposal #: 01-SSL-065

Name of Proposal: Coastal Bathymetry within the Range of Steller Sea Lions in Alaska

Applicant: State of Alaska

Principal Investigator: Thomas S. Gelatt

Number of years: 1

Proposed Funding Amount: \$44,101

Brief Project Description: High-quality digital bathymetry of the continental shelf, bays and fjords are sparse. Alternative digital bathymetry layers which cover the entire range of Steller sea lions in Alaska are of low resolution. The low resolution has made the extant data difficult to work with, especially in bays, fjords, and areas close to shore. This award is for the purchase of an existing digital bathymetric map of the Gulf of Alaska, Aleutian Islands, and Bering Sea. In addition, to hire a professional contractor to digitize those areas not included in the existing map, and for the equipment required to store and process these data. Once processed into a surface model of the seafloor, we will use these bathymetry to enhance the presentation and analysis of Steller sea lion movement and diving behavior.

Proposal #: 01-SSL-047

Name of Proposal: Satellite-Linked Mortality Transmitters in Steller Sea Lions: Assessing the Effects of Health Status, Foraging Ability, and Environmental Variability on Juvenile Survival and Population Trends

Applicant: Texas A&M Research Foundation

Principal Investigator: Dr. Markus Horning

Number of years: 3

Proposed Funding Amount: \$1,689,406

Brief Project Description: This project is to implant satellite-linked mortality transmitters (SMX tags) into 60 free-ranging juvenile Steller sea lions, and an additional 12 animals temporarily held at the Alaska Sea Life Center. We will perform comprehensive assessments of the status of body condition, health and immune system, and pollutant levels. From the SMX tags we will determine: time & date of death and weekly cumulative foraging effort from implantation until death. In a new experimental paradigm, we will analyze differences between survivors and non-survivors in conditional and health status at time of release, as well as seasonal, interannual and ontogenetic dive effort. We will test the predictive power of health, condition and behavioral parameters measurable after weaning, on future survival and thus population trends. Assistance is requested from the NMFS for coordinating and conducting ship-based juvenile sea lion capture trips since NMFS is the organization most qualified to conduct this task. At the discretion of NMFS, this task can be subcontracted partially or entirely to the ADF&G. In addition, NMFS will be tasked with deploying and monitoring external SRDs on SMX implanted sea lions.

Proposal #: 01-SSL-021

Name of Proposal: Seasonal Forage Patterns of Steller Sea Lions

Applicant: UAF, School of Fisheries & Ocean Sciences

Principal Investigator: Kate M. Wynne

Number of years: 2

Proposed Funding Amount: \$111,464

Brief Project Description: Collection of potential prey species will be augmented by fish surveys conducted by NMFS during the course of this study.

Proposal #: 01-SSL-055

Name of Proposal: Metal Toxicity in Steller Sea Lion (*Eumetopias jubatus*) Tissues and Cell Lines

Applicant: Yale University, School of Medicine

Principal Investigator: John P. Wise, PhD.

Number of years: 3

Proposed Funding Amount: \$1,096,715

Brief Project Description: This proposal investigates the role of contaminants as environmental factors in the decline of the western population of the Steller sea lion. It focuses on metals, particularly widespread and toxic class of environmental contaminants and measures of their accumulation in the tissues of the sea lions. Further, it investigates the toxicity of these metals in the major organ systems of the sea lions by establishing cell lines from these organ systems and determining the potencies of metals in these lines, so that a priority list can be developed for intervention measures.

Proposal #: 01-SSL-002

Name of Proposal: Investigation of retinol (Vit. A) and tocopherol (Vit. E) status in Steller Sea Lion: Contribution to Nutritional Stress in Declining Populations

Applicant: Sea Research Foundation, Mystic Aquarium

Principal Investigator: Dr. Lisa Mazzaro

Number of years: 2

Proposed Funding Amount: \$421,690

Brief Project Description: Significant evidence supports the hypothesis that Steller sea lions are in decline because of an altered diet that does not meet their nutritional needs. Low lipid content has been identified as an important difference. This study will investigate a related aspect of diet quality- fat soluble vitamins. Vitamins A and E are required for normal growth, development and reproduction, yet there is little information on the vitamin content of the current diet of the Steller sea lion in areas of decline, the vitamin status of the animals in the wild, on the specific dietary requirements of the sea lions. The study will include analysis of samples collected by and/or archived by NMFS.

Proposal #: 01-SSL-049

Name of Proposal: Linking Animal-borne Data Records to Autonomous remote Imaging Systems: Implementing the RAT-Link

Applicant: Texas A&M Research Foundation

Principal Investigator: Dr. Markus Horning

Number of years: 2

Proposed Funding Amount: \$281,446

Brief Project Description: This proposal is to develop the hardware and software specifications for a short-range, bi-directional radio data link between animal-borne data records, and satellite-linked remote, automated data collection and relay stations. This Roving Archival Tag Link (RAT-Link) will be adapted for use on and tested with a miniaturized Timed-Data Recorder (TDR), in cooperation with the leading manufacturer of TDRs, Wildlife Computers. The purpose of the RAT-Link is to facilitate the recovery of high-density data from implanted or external archival tags for use on Steller sea lions under typical conditions where recovery of high-density data is very difficult. The development of the RAT-Link concept has just been initiated by Texas A&M's Applied Biotelemetry Lab in conjunction with Wildlife Computers, under sponsorship by the National Science Foundation, Division of Polar Programs. This same NSF program is also sponsoring the development and application for the SLIDAP system, a satellite-linked remote autonomous imaging and data collection system suitable for integration for the RAT-Link.

Proposal #: 01-SSL-022

Name of Proposal: Comparison of Prey Availability and Ecology in Steller Sea Lion Foraging Regions: A Coordinated Aerial Remote Sensing Study

Applicant: UAF, School of Fisheries & Ocean Sciences

Principal Investigator: Evelyn Brown

Number of years: 2

Funding Amount: \$1,003,147

Brief Project Description: This proposal is coordinated with ongoing shipboard sea lion research programs in the three areas in Alaska (Kodiak, Lower Cook Inlet, and Southeast AK) during two time periods (late spring, late summer). The overall objective is to compare synoptic marine ecological information between two sea lion foraging regions over large spatial regions at three temporal scales (diurnal, seasonal, interannual), supplementing data from the existing surveys. One region (Southeast Alaska) has a healthy population and the other (Kodiak) has a population in decline. The secondary objective is to cover regions not accessible by ship in the extreme nearshore and upper surface (<5m) and to extend coverage beyond ship transects. Using airborne remote sensing instrumentation (including lidar, IR radiometer, ocean color video, high resolution digital video, and IR video) we will map ocean fronts, chlorophyll, zooplankton, fish prey resources, fish and marine mammal predators, predator/prey interactions (foraging bouts), and human activity in the upper 50m of the water column during the day and night. We will use shipboard results for signal validation, interpretation, and to estimate detection probabilities (sub-attenuation correction factors). We will produce 3-d visualizations of the results, link aerial to satellite data, and perform geostatistical analysis for interpretation. We require collaboration from the NOAA ETL lab in Boulder to provide instrumentation and personnel for airborne surveys and signal processing.

Proposal #: 01-SSL-052

Name of Proposal: Acoustic Characterization of Steller Sea Lion Forage Species

Applicant: University of Washington

Principal Investigator: John K. Horne, PhD.

Number of years: 2

Proposed Funding Amount: \$196,436

Brief Project Description: This proposal has four components, 1) Acoustic characterization of Steller sea lion prey species; 2) Quantify variance of acoustic backscatter within and among species; 3) Comparison of forage and other fish species to Bering Sea and Gulf of Alaska; and 4) Compare acoustic model results to acoustic survey data. Cooperative activities: access to data base, possible cruise participation.

Proposal #: 01-SSL-013

Name of Proposal: Traditional Knowledge of Steller Sea Lions and Community-Based Monitoring of Local Seasonal Haul-outs.

Applicant: The Alaska Sea Otter and Steller Sea Lion Commission

Principal Investigator: Lianna Jack

Number of years: 3

Proposed Funding Amount: \$475,855

Brief Project Description: The Commission, in partnership with 10 Alaska coastal communities, will develop and implement a traditional knowledge of Steller sea lion health and abundance survey. From the survey, local seasonal haul-outs will be identified, protocols will be developed for community based monitoring of local seasonal haul-outs, and the testing of the protocols will ensure reporting of survey results.

Proposal #: 01-SSL-016

Name of Proposal: Subsistence Harvest Monitoring of Steller Sea Lions on St. Paul Island, Alaska

Applicant: Aleut Community of St. Paul Island

Principal Investigator: Michael T. Williams, Jesse A. Coltrane

Number of years: 3

Proposed Funding Amount: \$210,957

Brief Project Description: This project objectives are 1) to design and implement a monitoring program for the subsistence harvest of Steller sea lions on St. Paul Island, Alaska; 2) to train samplers from other rural Alaska communities in tissue sampling techniques; and 3) to devise and implement a marine mammal tissue collection and distribution center for samples collected from marine mammals during subsistence harvests.

Proposal #: 01-SSL-053

Name of Proposal: Assessing Population Trends and Dietary Intake of Steller Sea Lion Populations Along the Western Alaska Peninsula and Eastern Aleutians.

Applicant: Aleutians East Borough

Principal Investigator: Kate Wynne

Number of years: 3

Proposed Funding Amount: \$547,907

Brief Project Description: This proposal seeks to improve the accuracy and precision of the population indices through expanded aerial and vessel surveys in one portion of the endangered western stock of Steller sea lions. Also to provide additional information on seasonal prey consumption by Steller sea lions through scat collection at rookeries and haul-outs along the Alaska Peninsula and Eastern Aleutians. Provide additional platforms of opportunity to observe Steller sea lion behavior at haul-outs and rookeries, observe possible killer whale predation on Steller sea lions, and resight animals branded under National Marine Fisheries Service research programs. This proposal will require the issuance of marine mammal permits from NMFS.

Proposal #: 01-SSL-006

Name of Proposal: Identify Steller Sea Lion Rookeries; Gathering Traditional Ecological Information on Steller Sea Lions from Perryville, Alaska

Applicant: Bristol Bay Native Association

Principal Investigator: Helen Chythlook

Number of years: 1

Proposed Funding Amount: \$80,844

Brief Project Description: Due to decline in Steller sea lion populations around Perryville, traditional subsistence hunting activities in some areas of the Alaska Peninsula has stopped. This proposal will fill the need for Steller sea lion research associated in identifying rookeries and gathering important traditional ecological information to build local research capacity of Alaska Natives in the Peninsula communities to enhance their subsistence way of life.

Proposal #: 01-SSL-042

Name of Proposal: Assessment of Fine-Scaled Interactions Between Steller Sea Lion Abundance and Trends of Local Fisheries

Applicant: University of Washington, School of Aquatic and Fishery Sciences

Principal Investigator: John R. Skalski

Number of years: 2

Proposed Funding Amount: \$268,238

Brief Project Description: This project will examine the fine-scaled spatial-temporal trends in multispecies fisheries abundance and localized declines in sea lion abundance. Experimental trawl and NOAA survey data, along with NOAA fisheries stock assessment models, will be used in assessing localized trends in Steller sea lion abundance. Survey data and access to stock assessment models will be provided by NMFS.

Proposal #: 01-SSL-031

Name of Proposal: Geographical Ecology of Steller Sea Lions and Ephemeral, High-quality Prey Species in Southeast Alaska

Applicant: University of Alaska Fairbanks

Principal Investigator: Mary F. Willson

Number of years: 2

Proposed Funding Amount: \$136,575

Brief Project Description: This proposal will examine the geographical relationship of spring-spawning forage fish runs to Steller sea lion haul-out and foraging distribution in Southeast Alaska. This goes toward an ultimate goal of determining the fitness consequences of high-quality spring prey for sea lions. We will provide prey samples for caloric and fatty acid analyses with NMFS biologists and share information.

Proposal #: 01-SSL-068

Title: Interaction of Steller Sea Lions and Fisheries Managed by the State of Alaska.

Applicant: Alaska Department of Fish and Game

Principal Investigator: Douglas Eggers

Number of years: 1

Funding Amount: \$250,478

Brief Project Description: This project proposes to evaluate competitive interaction of state managed fisheries and Steller sea lions based on a framework procedure to determine candidate areas (Western, Central and East Gulf of Alaska) and prey species (pollock, salmon, Pacific cod, and small forage fishes included Herring) where a potential competitive interaction between fisheries and SSL exist. Candidate areas are areas where SSL declines cannot be explained from documented takes; candidate prey species are prey species where there is a significant overlap in the size consumed and exploited. If a decline in the abundance of a candidate prey species or an expansion of fisheries targeted on the candidate prey species has occurred in the candidate area, coincide with decline in SSL, then competitive interaction cannot be ruled out. For these situations, management measures to mitigate competitive interaction will be implemented.

Proposal #: 01-SSL-066

Title: The Subsistence Harvest of Steller Sea Lions and Harbor Seals by Alaska Natives. Harvest Assessment Program, 2001

Applicant: Alaska Department of Fish and Game

Principal Investigator: James Fall

Number of years: 1

Funding Amount: \$250,000

Brief Project Description: This project proposes to document the annual subsistence takes of sea lions and harbor seals by Alaska Natives in 62 communities for the calendar year 2001. The project will be conducted by the State in partnership with the Alaska Native Harbor Seal Commission. The project goal is to estimate the total annual direct takes of sea lions and harbor seals by geographic area. Information collected will include harvest, struck and lost, total take, month of take, sex of animals, age

class of animals, number of hunters, harvest success rates. Qualitative information will be statistically analyzed and presented in a published annual report and an updated computer accessible database.

Proposal #: 01-SSL-071

Title: Estimates of changes in the foraging behavior of Steller sea lions in response to precipitous declines of the herring population in Prince William Sound

Applicant: Prince William Sound Science and Technology Institute

Principal Investigator: Richard Thorne

Number of years: 1

Funding Amount: \$220,000

Brief Project Description: The Pacific herring population in Prince William Sound has declined 50-fold over the past decade, and recently dropped below estimates of average annual marine mammal predation from the mid-1990's. Changes in the foraging behavior of Steller sea lions have become apparent in the past year. The anticipated continued decline of the herring population will force major changes in Steller sea lion foraging behavior, distribution, and possibly abundance. This study proposes to investigate these changes using techniques that have been developed by the Prince William Sound Science Center over the past several years.